

Statistics and society

5



syllabus reference

- Data analysis 1
- Statistics and society

In this chapter

- 5A Collecting data
- 5B Organising data
- 5C Displaying data
- 5D Quality control

Are you READY?

Try the questions below. If you have difficulty with any of them, extra help can be obtained by completing the matching **SkillSHEET**. Either click on the **SkillSHEET** icon next to the question on the *Maths Quest Preliminary Course CD-ROM* or ask your teacher for a copy.

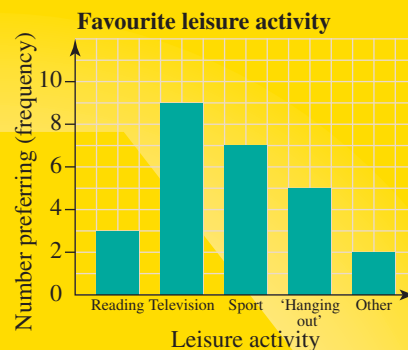
Presenting data in a frequency table

- 1 Copy and complete the frequency table at right for the scores listed below.
1, 3, 2, 6, 4, 4, 3, 5, 2, 3, 1, 3, 4, 2, 5,
3, 6, 2, 3, 6, 1, 3, 2, 4

Score (x)	Tally	Frequency (f)
1	III	3
2		
3		
4		
5		
6		

Reading column graphs

- 2 This is a graph of preferred leisure activities of a Year 8 class.
- How many students preferred sport as a leisure activity?
 - How many students were in the class?
 - Which was the most favoured activity?
 - How many times more popular than reading was watching television?
 - Which two activities are closest in popularity?



Drawing sector graphs

- 3 For the following table of values showing the number of kilograms of meat of various types that a butcher sold in a day:
- copy and complete the table of values
 - construct a sector graph to display the data. You could use a spreadsheet program such as Excel to generate a sector graph

Type of meat	Amount sold (kg)	Fraction	Angle size ($^{\circ}$)
Lamb	10		
Beef	45		
Pork	5		
Chicken	15		
Turkey	10		
Rabbit	5		
Total	90		

Writing one quantity as a percentage of another

- 4 In each of the following, write the first quantity as a percentage of the second.
- 18, 500
 - 4, 2500
 - 245, 500
 - 6, 2000

Analysing data

There are many cases in society where data need to be analysed. Governments and businesses have data analysed regularly to try and make accurate predictions about future trends.

Consider the case of a government department such as the Roads and Traffic Authority. This department needs to gather data about places where accidents occur. These data are analysed and decisions are then made about what areas need to have roadworks and what places need greater police supervision.

Now consider a business example. A department store analyses sales figures throughout the year to determine its stock orders and staffing requirements.

In sport, the gathering of **statistics** is used to measure player performance. These are kept as a matter of interest to followers of the sport, and are used by coaches when selecting their teams and planning tactics against opposition teams.

When analysing data, trends need to be observed. The discovery of these trends allows for predictions of future outcomes.

Why statistical investigation?

Below are some common examples of statistical analysis.

- (a) Weather records
- (b) Unemployment and inflation figures
- (c) Sales records
- (d) Hospital admissions
- (e) World records in sport

For each of the above discuss:

- 1 the reason that such records are kept
- 2 the methods that are used to collect the information
- 3 what information could be gained from the analysis
- 4 what future predictions could be made as a result of the analysis.

A statistical investigation – I

Choose an area of interest for which you would like to do a statistical analysis. For the analysis you have chosen, answer the following questions.

- 1 What information do you intend to collect?
- 2 Of what use is this information and to whom would it be useful?
- 3 What predictions or decisions could be made based on your analysis?

Statistical processes

The purpose of completing a statistical inquiry is to turn raw **data** into meaningful **information**. Data are a set of facts that are collected, but limited data taken alone can have very little meaning. When lots of data are collected and presented and conclusions are drawn, the data become more useful information.

When we set out to complete a statistical investigation, there are six stages that need to be completed:

- Stage 1. Posing questions
- Stage 2. Collecting data
- Stage 3. Organising data
- Stage 4. Summarising and displaying data
- Stage 5. Analysing data and drawing conclusions
- Stage 6. Writing a report.

The whole process needs to be well planned as what can be achieved at the later stages of the process depends upon what has been done in the earlier stages.

Posing questions

The initial stage of the statistical process is to determine the final information required.

For example, suppose that you want to find out the best time of year to plan a skiing holiday and the best location to take that holiday? Questions that may need to be posed include:

- When during the year do the best skiing conditions occur?
- Which resort has the best skiing conditions on a regular basis?
- What is the cost of accommodation, lift tickets and ski hire at each resort?
- What facilities are available at each resort?

When you have finished collecting data and can answer each question, you will be ready to make a conclusion.

Posing questions

For each of the following, pose some questions that, if answered, would allow you to make a conclusion.

- 1 A department store manager wants to know the number of extra staff that should be hired to work in the weeks leading up to Christmas.
- 2 A local council wants to find out what new sporting facilities the community wants and needs.
- 3 The NRMA wants to know which model cars are the most secure against theft.
- 4 The Australian test cricket selectors need to choose a new opening batsman.
- 5 A potential investor wants to know which shares represent the best potential gains.
- 6 A newspaper wants to try and predict the winner of the next federal election.

A statistical investigation – 2

For the area that you are going to investigate, list the questions you will need to answer in order to draw a conclusion.

Collecting data

Data can be collected using either external or internal sources. To collect data from an **external source** means that the data are available by doing some research. For example, if you were researching share prices, data would be available from the stock exchange. Other types of data can be obtained from organisations such as the CSIRO, local councils, the NRMA and the Australian Bureau of Statistics.

If data are not available from an external source, you will need to generate the data yourself. This is called using **internal sources**. There are two methods of acquiring data internally.

1. *Observation* — this is used if the data collection does not require a response from people. For example, you may be surveying the number of customers that enter a certain shop during the day or the number of students at your school who are out of uniform.
2. *Questioning* — this is used when the data are obtained by getting a response from people. For example, you may be investigating what sporting facilities are needed in your local area.

When designing a survey for your investigation, the questions need to be well organised and thought needs to go into how the data are going to be tabulated. It is easier to organise information if the questions asked are not open-ended. This means that the responses are limited.

‘What sporting facilities do you think are needed in this area?’ This question invites a range of responses that may be difficult to tabulate. A better method would be to list a few options that are likely to prove popular and ask people to rank them in order of priority.

Similarly, when there could be a large range of responses to a question it is easier to group these responses.

‘A survey form’

Please rank the following sporting needs in this area.

Cricket nets	<input type="checkbox"/>
Tennis courts	<input type="checkbox"/>
Golf course	<input type="checkbox"/>
Netball courts	<input type="checkbox"/>
Soccer field	<input type="checkbox"/>
Other	<input type="checkbox"/>

WORKED example 1

‘What is your annual income?’ Redesign this question so that the results are easier to tabulate.

THINK

The range of responses could be simplified by putting them into income brackets.

WRITE

Within what range does your income fall?

\$0 – \$9999
 \$10 000 – \$19 999
 \$20 000 – \$29 999
 \$30 000 – \$39 999
 \$40 000 – \$49 999
 \$50 000 or more

remember

1. Data can be collected from internal or external sources.
2. An external source is where the data have been collected and are available by doing research.
3. An internal source is where you need to gather the data yourself.
4. Internal data gathering can be done by observation or questioning.
5. Observation is used when the data can be obtained without a response from other people.
6. Questioning is used when the data are found by getting people's responses.

EXERCISE 5A**Collecting data**

- 1 For each of the following, state whether the data source would be internal or external.
 - a The number of cars stolen in NSW each year
 - b The rise or fall in a share price over the past year
 - c The number of people who rode bikes to school today
 - d The number of people who voted in the last federal election
 - e Who people intend to vote for in the next federal election
 - f The most popular band among Year 11 students at your school
 - g The number of Holden cars sold each week in Australia
 - h The batting average of each player in the Australian cricket team
- 2 For each of the following, state whether the data would be gathered using observation or questioning.
 - a The number of sets of traffic lights in a country town
 - b The number of students in Year 11 at your school who started high school at a different school
 - c The most popular football team in Year 11
 - d The football team that attracts the largest crowds
 - e The number of students in your class with a learner's permit
 - f The number of trees in your school grounds
 - g The average weekly income of Year 11 students
 - h The number of people who speed through an intersection
- 3 Rewrite the following open-ended questions so that the responses will be easier to tabulate.
 - a Where is your favourite holiday destination?
 - b What is your weekly income?
 - c How many movies have you seen at the cinema this year?
 - d Who is your favourite singer or group?
 - e How many hours study do you do each week?
- 4 Design a questionnaire that will provide the following information.
 - a The sporting facilities that people would like to see in your area
 - b The amount of income and source of income among Year 11 students

**WORKED
Example****1**

A statistical investigation – 3

For your investigation:

1 State whether your data will be obtained from external or internal sources.

2 If you are using an internal source, state if you will use observations or questioning.

Regardless of what method you are using, give details on how you are going to collect your data.

You are now ready to collect your data.

Organising data

Once data have been collected, they need to be put into an organised form. This involves tallying the responses to a questionnaire, accurately recording your observations or tabulating the results of your research.

This task is made easier if the questionnaire is designed with ease of tabulation in mind. Usually the results are first organised into a table and the number of responses in each category recorded. This is often done with tally marks and using the gatepost method.

WORKED example 2

A survey is conducted among 24 students who were asked to name their favourite spectator sport. Their responses are recorded below.

AFL	Cricket	Cricket	Soccer	Rugby League
Cricket	Tennis	Cricket	AFL	Rugby League
AFL	AFL	Rugby Union	Soccer	Netball
Basketball	Basketball	Netball	AFL	Cricket
Cricket	AFL	Rugby League	Cricket	

THINK

Draw a table and beside each sport put a tally mark for each response. Every fifth tally mark becomes a gatepost.

WRITE

Sport	Tally	Frequency
AFL	I	6
Basketball		2
Cricket		7
Netball		2
Rugby League		3
Rugby Union		1
Soccer		2
Tennis		1

For simplicity, numerical data may be tabulated in groups.

WORKED Example 3

A Year 11 class was surveyed on their weekly income. The responses are shown below.

\$75 \$115 \$60 \$54 \$88 \$0 \$98 \$102
 \$56 \$45 \$83 \$71 \$40 \$37 \$87 \$117
 \$43 \$79 \$58 \$89 \$70 \$105 \$99 \$55

Complete the table below.

Income	Tally	Frequency
\$0–\$20		
\$21–\$40		
\$41–\$60		
\$61–\$80		
\$81–\$100		
\$101–\$120		



THINK

Count the number of responses within each category and put a tally mark in the column.

WRITE

Income	Tally	Frequency
\$0–\$20	I	1
\$21–\$40	II	2
\$41–\$60	IIII II	7
\$61–\$80	IIII	4
\$81–\$100	IIII I	6
\$101–\$120	IIII	4

Here we have done some very simple tables. These tables will be dealt with in greater depth in chapter 9.

remember

1. When data are collected they are usually first organised into table form.
2. Data can be easily counted using a tally column and the gatepost method.
3. Sometimes numerical data are better organised into categories.

EXERCISE 5B

Organising data

WORKED
Example

2

- 1 A class of students was asked to identify the make of car their family owned. Their responses are shown below.

Holden	Ford	Nissan	Mazda	Toyota	Holden
Ford	Holden	Ford	Mitsubishi	Toyota	Toyota
Nissan	Holden	Holden	Ford	Toyota	Mazda
Mazda	Toyota	Ford	Holden	Holden	Ford
Mitsubishi	Toyota	Holden	Ford	Ford	Toyota

Put these results into a table.

- 2 The results of a spelling test done by 30 students are shown below.

6	7	6	8	4	6	6	7	5	9
5	7	8	10	5	9	7	7	7	6
4	7	8	8	7	8	6	5	9	7

Put these results into a table.

WORKED
Example

3

- 3 The marks scored on a Maths exam, out of 100, by 25 Year 11 students are shown below.

87	44	95	66	78	69	66	92	78
54	60	66	69	66	77	79	66	71
71	83	74	81	69	70	57		

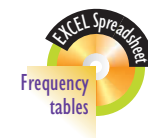
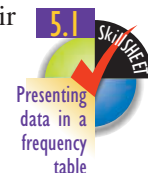
Copy and complete the table below.

Mark	Tally	Frequency
40–49		
50–59		
60–69		
70–79		
80–89		
90–99		

- 4 The data below show the number of customers that entered a shop each day in a certain month.

114	195	175	163	180	120	204	199
178	216	200	147	168	173	102	150
169	185	173	164	130	119	158	163
141	155	132	143	190	179	200	

Choose suitable groupings to tabulate these data.



A statistical investigation – 4

Organise the data for your investigation into a suitable table.

Displaying data

The most common way for displaying data is by using a graph. Different graphs have different purposes, which we will look at in more detail in chapter 9. For now, we will look briefly at column graphs and sector graphs.

A column graph is used when we wish to show a quantity. Categories are written on the horizontal axis and frequencies on the vertical axis.

WORKED Example 4

The table below shows the results of the survey on favourite sports.

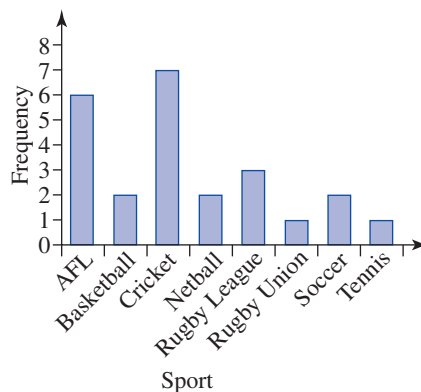
Sport	Frequency
AFL	6
Basketball	2
Cricket	7
Netball	2
Rugby League	3
Rugby Union	1
Soccer	2
Tennis	1

Show this information in a column graph.

THINK

- 1 Draw the horizontal axis showing each sport.
- 2 Draw a vertical axis to show frequencies up to 7.
- 3 Draw the columns.

WRITE





Graphics Calculator **tip!**

Drawing graphs

Your Casio graphics calculator can be used to draw some types of graphs, including column graphs. In practice, it is probably easier to draw the column graph manually but knowing how to do this will be of use later in this course.

Consider worked example 4.

1. From the **MENU** select **STAT**.



2. Delete any existing data. The calculator will not recognise any words so we will need to replace the names of the sports with the numbers 1–8. Write these numbers in **List 1** and the Frequencies in **List 2**.



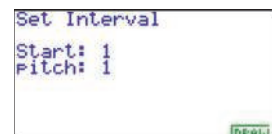
3. Press **(F1)** for **GRPH**.



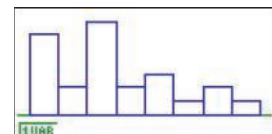
4. Press **(F6)** for **SET**, arrow down to Graph Type and press **(F1)** for **Hist**. Then arrow down to **Xlist** and press **(F1)** for **List 1**, then arrow down to **Frequency** and press **(F3)** for **List 2**. Your display should be as shown on the right.



5. Press **(EXE)** to return to the previous screen then **(F1)** for **GPH1**. Enter a Start = 1 and a Pitch = 1.



6. Press **(F6)** to draw the column graph. It will be drawn as a histogram, which has no gaps between the columns.



A sector graph is used when we want the graph to display a comparison of quantities. An angle is drawn at the centre of the circle that is the same fraction of 360° , as the fraction of people making each response.

WORKED Example 5

For the table in worked example 4, draw a sector graph.

THINK

- 1 Calculate each angle as a fraction of 360° .

WRITE

$$\text{AFL} = \frac{6}{24} \times 360^\circ = 90^\circ \quad \text{Basketball} = \frac{2}{24} \times 360^\circ = 30^\circ$$

$$\text{Cricket} = \frac{7}{24} \times 360^\circ = 105^\circ \quad \text{Netball} = \frac{2}{24} \times 360^\circ = 30^\circ$$

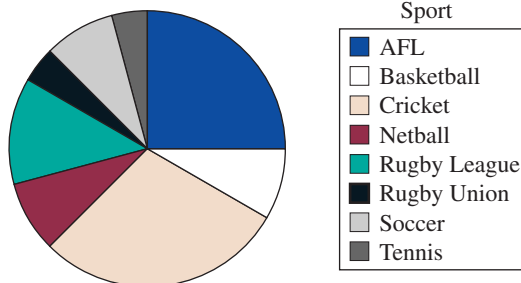
$$\text{Rugby League} = \frac{3}{24} \times 360^\circ = 45^\circ$$

$$\text{Rugby Union} = \frac{1}{24} \times 360^\circ = 15^\circ$$

$$\text{Soccer} = \frac{2}{24} \times 360^\circ = 30^\circ$$

$$\text{Tennis} = \frac{1}{24} \times 360^\circ = 15^\circ$$

- 2 Draw the graph.



Column graphs and sector graphs can also be drawn using a spreadsheet and the charting tool.

remember

1. A column graph is drawn when we want to display quantities.
2. A sector graph is drawn when we want to compare quantities.

EXERCISE 5C

Displaying data

WORKED
Example

4

- 1 Draw a column graph to display the data from question 1 of Exercise 5B.

WORKED
Example

5

- 2 Draw a sector graph to display the data from question 1 of Exercise 5B.

- 3 Draw a column graph to display the data from question 2 of Exercise 5B.

- 4 Draw a column graph to display the data from question 3 of Exercise 5B.

- 5 Draw a column graph to display the data from question 4 of Exercise 5B.

- 6 Draw a sector graph to compare the number of people in each category from question 3 of Exercise 5B.

A statistical investigation – 5

For your investigation draw suitable graphs. You may prefer to do so using a spreadsheet, by entering your results and using the charting function to produce your graphs.

Analysing data and drawing conclusions

Once the data have been organised and displayed, they need to be studied and conclusions drawn. It is at this stage that those making the **statistical inquiry** can reflect on the results and decide what the data mean.

These conclusions should be written in point form and from them recommendations can be made to the relevant bodies.

A statistical investigation – 6

What conclusions and recommendations can you make based on your study?

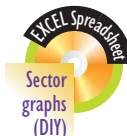
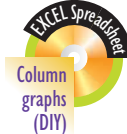
Writing the report

The final stage is to collate all earlier stages into a written report. The written report should:

1. Pose the questions that the statistical analysis is examining.
2. Explain how data were collected, what type of data were collected and from what sources they were collected.
3. The tables used should be included.
4. Relevant graphs should be used to display the data.
5. The conclusions and recommendations should be written and include reasons why these conclusions were reached.

A statistical investigation – 7

Complete a written report for your statistical inquiry.



Quality control

Companies use statistics to ensure that their product is of a required standard. This is known as **quality control**.

Consider the example of a company that produces matches. The cover of the matchbox says, 'Minimum contents 50 matches'. To ensure that this statement is correct, a sample of matchboxes from the batch is tested. If more than 3% of the boxes have less than 50 matches, the batch is said to be unsatisfactory and the entire batch is rejected.



WORKED Example 6

A batch of matchboxes is tested for its contents. If more than 3% of the matchboxes have less than 50 matches in them, the batch is rejected. If 300 matchboxes are tested and 10 have less than 50 matches, is the batch accepted or rejected?

THINK

- 1 Calculate 10 as a percentage of 300.
- 2 Make a conclusion.

WRITE

$$\frac{10}{300} \times 100\% = 3\frac{1}{3}\%$$

The batch is rejected, as there are more than 3% of boxes with less than 50 matches.

In some cases you will need to be able to tabulate the results before making a conclusion.

WORKED Example 7

From a batch of batteries a sample is tested to see how long it will take for them to go flat. The results are shown below.

Life (hours)	Frequency
200–249	2
250–299	5
300–349	7
350–399	15
400–449	42
450–499	38
500–549	36
550–599	20
600–649	7
650–699	3

If more than 20% of batteries go flat in less than 400 hours, the batch is rejected. Determine whether this batch is accepted or rejected.



THINK

- 1 Count the number of batteries in the sample.
- 2 Count the number of batteries that take less than 400 hours to go flat.
- 3 Calculate the percentage that go flat in less than 400 hours.
- 4 Make a conclusion about the batch.

WRITE

175 batteries in the sample.

29 batteries went flat in less than 400 hours.

$$\frac{29}{175} \times 100\% = 16.6\%$$

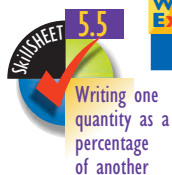
The batch is accepted.

remember

1. Statistical methods are used in quality control.
2. You will need to calculate the percentage of a sample that meets the requirements.
3. You should be able to obtain this information from a table.

EXERCISE 5D

Quality control


**WORKED
Example**
6

- 1 A batch of 400 tyres is tested. If more than 5% of the tyres lose their tread in less than 15 000 km, the batch is rejected. If 17 tyres lose their tread in less than 15 000 km, calculate if the batch is accepted or rejected.

- 2 One kilogram bags of sugar are tested to check their mass. A batch of 250 bags is tested. If more than 2% of the bags have a mass less than 1 kg, the batch is rejected. If 246 bags have a mass of 1 kg or more, calculate if the batch is accepted or rejected.

**WORKED
Example**
7

- 3 A batch of light globes is tested. A sample of globes are taken and tested to see how long they will burn. To be considered satisfactory, at least 90% of the batch must burn for more than 1000 hours. The results are shown in the table at right.

Determine if the batch is satisfactory.

Hours	No. of globes
0–249	1
250–499	6
500–649	15
750–999	46
1000–1249	89
1250–1499	65

- 4 The diameter of a batch of screws is given as 4 mm. A sample of the batch is tested. For the batch to be considered satisfactory, 95% of the screws must have a diameter between 3.9 mm and 4.1 mm. The results are shown in the table at right.

Determine if the batch is satisfactory.

Diameter	No. of screws
3.7–3.8	3
3.8–3.9	14
3.9–4.0	58
4.0–4.1	46
4.1–4.2	1

- 5 Boxes of toothpicks contain a minimum of 100 toothpicks. From a batch, 60 boxes of toothpicks are selected and their contents counted. If more than 4% of the boxes contain less than 100 toothpicks, the batch is rejected. The contents of the boxes are given below.

102 103 105 100 101 101 102 99 100 103 100 100
 101 102 102 101 100 100 100 101 101 100 100 100
 100 101 101 102 103 100 104 103 105 106 101 100
 102 99 100 103 100 101 102 102 103 101 100 102
 98 101 101 100 103 99 100 101 105 102 103 100

Determine if the batch is satisfactory.

- 6 The label on a soft drink bottle states that it contains 600 mL. From a batch of bottles, 40 are selected and their volumes measured. To be considered satisfactory, 90% of the bottles must contain between 590 mL and 610 mL. The volumes found are shown below.

599	600	602	598	585	592	604	603
606	603	600	615	602	588	595	608
600	607	602	602	590	610	602	608
615	598	594	610	595	604	601	600
602	598	600	597	604	605	606	600

Determine if the batch is satisfactory.



Privacy and ethical issues

Many of the questions that are the subject of statistical analysis ask people to provide information that may be considered private. Examples of this are:

- information on people's income
- information about people's voting intentions.

When such questions need to be asked, it is necessary for those conducting the inquiry to take steps to ensure that the privacy of the participants in the survey is maintained.

This can be done by doing the survey anonymously. In this way, the participant can be sure that the information provided cannot be tracked back to them. In some cases, large organisations doing major research are unable to do anonymous studies. In this case there must be some guarantee to the participants that the information will remain confidential, and when the data have been collated that response forms will be destroyed.

There are other issues associated with the use of statistical information. Ethical issues arise when organisations sell their data to other organisations. For example, a bank needs to keep information on its mortgage customers. If this information were then sold to an insurance company, which, in turn, was able to approach these people seeking their business, a major ethical breach would have occurred.

Privacy issues

- 1 Discuss with your family and friends the information they consider too private to reveal for the purposes of a survey. In your class make a list of all such issues.
- 2 Try to create a set of conditions under which people may be more willing to reveal more detailed private information. This may include anonymous surveying, privacy guarantees, or the use of grouping the data so specific details do not need to be revealed.

Statistical organisations

Many major organisations carry out regular statistical analysis. These organisations include: Australian Bureau of Statistics; United Nations; World Health Organization; Morgan Gallup Polls; and NRMA.

These organisations collect data for a wide variety of purposes. If you look at any statistical analysis in a book, magazine or newspaper, the source of the statistics will be given. From this you can find out the names of many similar organisations. In many cases the methods used by the organisation will also be explained.

Organisations that use statistics

Choose an organisation that regularly collects statistical data.

- 1 Give an example of the type of information it aims to collect.
- 2 For what purpose is this information collected?
- 3 What conclusions do they hope to draw?
- 4 For whom is the information collected and who is going to act on the results?

summary

Analysing data

- Data are analysed by various groups for many reasons. In each case the aim is to provide a useful conclusion to a problem.
- Facts that are gathered are called data.
- When data are put into a meaningful form they become more meaningful as information.

Statistical processes

There are six stages to a statistical inquiry.

- Stage 1.** Posing questions — questions are set to find the information that will help solve the problem.
- Stage 2.** Collecting data — this can be done:
 - externally — this involves obtaining data from outside sources
 - internally — this involves researchers generating information.Internal collection of data can be done by observation or questioning.
- Stage 3.** Organising data — putting the results into an organised, readable form.
- Stage 4.** Summarising and displaying data — the display of the tables used and the drawing of graphs.
- Stage 5.** Analysing data and drawing conclusions — reading and interpreting the results to answer the original problem.
- Stage 6.** Writing a report — the explanation of the above processes and how the conclusions were reached.

Quality control

Statistical methods are used by companies to maintain standards in their products and to determine consumer satisfaction.

Major organisations

Organisations such as the United Nations, Australian Bureau of Statistics and the World Health Organization use statistics for the benefit of the communities they serve.

CHAPTER

review

5A

- 1 For each of the statistical investigations below, state whether the data source would be external or internal.
- a The wins recorded by a major football team
 - b The number of brick homes in an area
 - c The number of sales made by a department store in a month
 - d The amount of traffic passing through an intersection in one hour

5A

- 2 For each of the following, state whether the data would be gathered using observation or questioning.
- a The number of surfers on various beaches
 - b The brand of surfboard preferred by surfers
 - c The average height of Year 11 students at your school
 - d The most popular movie among Year 11 students at your school

5A

- 3 Rewrite each of the following questions so that the results are easier to tabulate.
- a What is the distance from your home to school?
 - b Describe the type of house you live in.
 - c What is the number of kilometres that your family car travels in one year?
 - d What is your favourite sport?

5B

- 4 A survey is conducted on the number of people living in each household in a street. The results are shown below.

1	4	5	2	2	3	4	6	1	2	5
6	4	4	6	3	2	3	5	1	3	4
3	3	4	2	2						

Put these results into a table.

5B

- 5 A group of Year 11 students were asked to state the number of CDs that they had purchased in the last year. The results are shown below.

12	1	13	20	5	22	35	12	17	20
9	5	11	0	14	25	3	8	10	9
12	6	18	7	10	9	6	23	14	19

Put the results into a table using the categories 0–4, 5–9, 10–14 etc.

5C

- 6 Draw a column and a sector graph to represent the results to question 4.

5C

- 7 Draw a column and a sector graph to represent the results to question 5.

test
yourselfCHAPTER
5